

IBECS: INTEGRATED BUILDING ENVIRONMENTAL COMMUNICATIONS SYSTEM

Building a Better Control System

An ideal lighting control system would respond automatically to changes in occupancy, daylight levels, and energy costs, while offering occupants more control over their personal lighting environment. However, current advanced control strategies are expensive and do not always perform as expected.

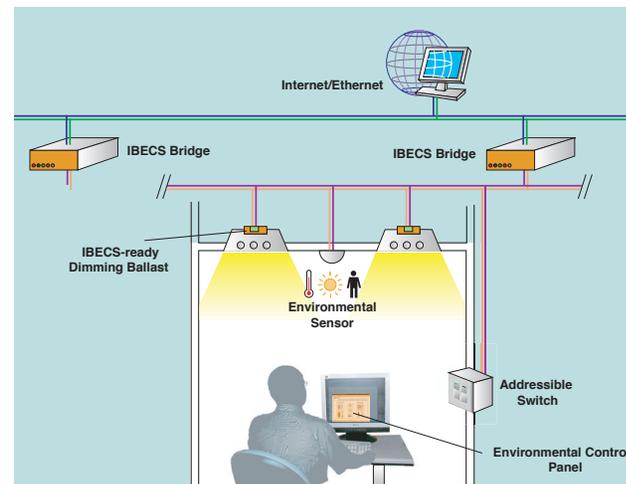
IBECS is a communications network that controls lighting and other electrical systems in a building. Developed at the Lawrence Berkeley National Laboratory, IBECS will provide facilities managers with cost-effective networking infrastructure and internet-based tools to manage building electrical loads while allowing occupants supervised control of local lighting.

Ballast network interfaces connect the light fixtures and other equipment to the IT network.



What IBECS Does

- Adds low-cost intelligence to ballasts, switches, and sensors.
- Implements demand-responsive lighting (load shedding) by coupling dynamic **control** of lighting with real-time **monitoring** of electric lighting power
- Uses common bus architecture for all sensors
- Speaks to all devices with a common protocol, lowering the cost of software development.
- Adds network connectivity to lighting and other equipment, giving both facilities managers and occupants supervised control over building lighting systems.



Benefits

Providing network connectivity to lighting equipment will bring about a complete transformation in how building lighting systems are commissioned, operated, and maintained.

- Building managers will have the ability to selectively control lighting loads while monitoring electric power in realtime.
- Demand responsive lighting will reduce operating costs for the building while improving the reliability of the overall electrical grid.
- IBECS gives building occupants greater influence over their personal lighting environment by allowing them to adjust local lights using a web browser on their PC.
- Embedded lighting devices and advanced controls have the potential to reduce energy consumption and electric demand in California commercial lighting systems. If used initially in only 1% of all commercial buildings, energy savings of 76 GWh per year are possible.
- Ten year cumulative savings would reach 4180 GWh if the market penetration increases by 1% per year.

INTERESTED?

Manufacturers can use IBECS research to develop new products for the controlling lighting and other functions in buildings.

Large commercial developers can incorporate building control strategies into new building projects.

Office occupants will be able to control lighting, temperature, and their local environment from their desktop.

Researchers can use IBECS technology to test building control strategies.

The environmental sensor developed in this project measures light, temperature, and occupancy.



Technical reports about IBECS are at:
http://buildings.lbl.gov/hpcbs/Element_3/02_E3.html

This project is part of LBNL's High-Performance Commercial Building Systems program, a three-year public-private research initiative targeting substantial reductions in the energy costs of commercial buildings.

For access to all program results, see:
<http://buildings.lbl.gov/hpcbs>



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